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EXAMINER	
BERNATZ, KEVIN M	
ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/964,781	YASUI ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36,44 and 45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9-32,34-36,44 and 45* is/are rejected.

7)☒ Claim(s) *6-8 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/8/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendments to claims 1 and 3, and addition of new claims 44 and 45, filed on December 15, 2003, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Examiner's Comments

3. Regarding the limitation(s) "mainly aluminum" in claims 1 and 3, the Examiner has given the term(s) the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111. Specifically, the Examiner has interpreted this limitation to include aluminum and aluminum alloys, including aluminum oxide materials.

4. The indicated allowability of claims 15 - 36 is withdrawn in view of the newly discovered reference(s) applied below. Rejections based on the newly cited reference(s) follow.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: after "Medium" insert "Including Aluminum Layer Having Holes".

Claim Objections

6. Claims 6 – 8 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 15 – 22, 24 – 32 and 34 – 36 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21 - 47 of copending Application No. 10/656,242 (U.S. Patent App. No.

2004/0048092 A1 to Yasui et al.) in view of Kikitsu et al. (U.S. Patent No. 6,602,620). This is a provisional obviousness-type double patenting rejection.

Regarding claims 15, 27 and 29, Yasui et al. disclose a magnetic recording medium (*claim 21*), in which an oxide layer having holes on a substrate (*claim 21 – recording layer*) is filled with a magnetic substance (*claim 21*), comprising at least one base layer (i.e. applicants' "conductive layer") between the oxide layer and the substrate (*claim 21*), wherein the conductive layer has a fcc structure (*claim 33*), and the magnetic substance includes a hard magnetic substance that has a $L1_0$ structure and the c-axes of which are oriented in the direction perpendicular to the substrate (*claim 21*).

Regarding the limitation "its (001) face is oriented in a direction perpendicular to the substrate" (claim 15), it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the

applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, both the disclosed and claimed structures are substantially identical in that an fcc alloy layer is located under a $L1_0$ perpendicular magnetic material filled in a columnar pore. Since the $L1_0$ magnetic material will grow based upon the fcc orientation of the underlying base layer, the Examiner deems that there is sound basis for the position that the (001) face of the fcc conductive layer will necessarily be oriented in a direction perpendicular to the substrate or the magnetic layer would *not* achieve the disclosed $L1_0$ structure. Therefore, in addition to the above disclosed limitations, the presently claimed property of "its (001) face is oriented in a direction perpendicular to the substrate" would have necessarily been present because the disclosed and claimed structures both possess fcc oriented underlayers under $L1_0$ oriented columnar magnetic layers.

Regarding claims 27 and 29, Yasui et al. disclose a conductive layer meeting applicants' claimed material and crystal structure limitations (*claim 34*). Regarding the limitation "its square array face is oriented in a direction perpendicular to the substrate" (claim 27), the Examiner deems the disclosed $L1_0$, $L1_1$ and $L1_2$ alloys (*claim 34*) would necessarily meet this limitation since such an orientation would be necessary to form a $L1_0$ columnar magnetic layer above the disclosed conductive layer (*claim 21*).

Yasui et al. fail to claim aluminum oxide as the oxide material.

However, the Examiner deems that silicon oxide and aluminum oxide are known equivalents in the field of oxide materials for use in producing columnar magnetic

layers, as taught by Kikitsu et al. (*col. 9, lines 24 – 36 and col. 10, lines 5 – 23*). Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, silicon oxide and aluminum oxide are equivalents in the field of non-magnetic materials for use in producing columnar magnetic layers. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Regarding claims 16, 20, 21, 28, 30 and 31, Yasui et al. disclose magnetic materials meeting applicants' claimed limitations (*claims 21 - 23*). The Examiner notes that any layer deposited on another layer necessarily is "given epitaxial growth" since all layers influence the growth of subsequently deposited layers.

Regarding claims 17 - 19, Yasui et al. disclose conductive layers meeting applicants' claimed limitations (*claims 26 and 34*).

Regarding claims 22 and 32, Yasui et al. disclose a MgO (001) layer meeting applicants' claimed structural limitations (*claim 35*).

Regarding claims 24, 25, 34 and 35, Kikitsu et al. teach that the holes can be arranged according to applicants' claimed structural limitations depending on the desired areal recording density (*Figures; col. 10, lines 24 – 25; and col. 17, lines 36 – 50*).

Regarding claims 26 and 36, Yasui et al. disclose an apparatus meeting applicants' claimed limitations (*claim 36*).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1 – 4, 9, 10, 12 – 14 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('620 B1) in view of Belser (U.S. Patent App. No. 2002/0071214 A1).

Regarding claims 1, 14 and 45, Kikitsu et al. disclose a magnetic recording apparatus comprising a magnetic recording medium (*Title*) in which a mainly aluminum oxide layer having holes (*Figure 13A, element 31; col. 9, lines 24 – 36; col. 25, lines 21 – 25; and col. 30, lines 23 – 37*) on a substrate (*Figure 13B, element 10*) is filled with a magnetic substance (*Figure 13A, element 32 and col. 25, lines 26 – 38*), comprising at least one underlayer (i.e. applicants' "conductive layer") between the mainly aluminum layer and the substrate (*Figure 13B, element 20 and col. 25, line 66 bridging col. 26, line 14 – "Cr" or "NiFe"*), wherein the magnetic substance contacts the conductive layer (*Figure 13B*) and includes a hard magnetic substance and the c-axes of which are oriented in a direction perpendicular to the substrate (*col. 10, lines 34 – 41; col. 25, lines 26 – 38; and col. 26, lines 10 - 14*).

Kikitsu et al. fail to disclose whether the magnetic alloys possess a hexagonal close packed (hcp) structure.

However, Belser teaches that for perpendicular recording, using Co hcp alloys over suitable underlayers can produce a hard magnetic recording layer capable of supporting "much higher linear densities than conventional longitudinal designs" (*Paragraphs 0005 and 0019*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. to use an hcp Co magnetic alloy as taught by Belser since such an alloy can produce a hard magnetic recording layer capable of supporting "much higher linear densities than conventional longitudinal designs".

Regarding claims 2, 9 and 10, Kikitsu et al. disclose magnetic alloys meeting applicants' claimed composition limitations (*col. 25, lines 26 – 39*). Regarding the limitation "given epitaxial growth", Kikitsu et al. teach using the conductive layer as a seed layer for the magnetic material for controlling the anisotropy and, hence, "epitaxial growth" of the subsequently deposited magnetic layer (*col. 13, line 24 bridging col. 14, line 8*)

Regarding claim 3, the limitation(s) "formed by anodic oxidization", is a process limitation(s) and is disclosed by Kikitsu et al. for producing the nanoholes in the aluminum oxide layer (*col. 29, line 50 bridging col. 30, line 47*).

Regarding claim 4, the limitation(s) "is a base electrode layer" is (an) intended use limitation(s) and only conveys a structural limitation that the layer must be a conductive layer (i.e. capable of functioning as a base electrode layer). Note that "in apparatus, article, and composition claims, intended use must result in a ***structural***

difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim***. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, Kikitsu et al. teach using metallic materials which are deemed to be clearly capable of functioning as a "base electrode layer' (*col. 25, line 66 bridging col. 26, line 14 – "Cr" or "NiFe"*).

Regarding claims 12 and 13, Kikitsu et al. teach that the holes can be arranged according to applicants' claimed structural limitations depending on the desired areal recording density (*Figures; col. 10, lines 24 – 25; and col. 17, lines 36 – 50*).

11. Claims 5, 11 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. in view of Belser as applied above, and further in view of Lambeth et al. (U.S. Patent No. 6,348,416 B1).

Kikitsu et al. and Belser are relied upon as described above.

Regarding claims 5, 11 and 44, neither of the above disclose a conductive layer meeting applicants' claimed structural or composition limitations, nor a soft magnetic layer under the conductive layer.

However, Lambeth et al. teach that improved perpendicular magnetic properties, especially coercivity (*Tables and examples*) can be obtained by using a structure

wherein the perpendicular hcp Co alloy is provided over a nonmagnetic hcp (0002) alloy, a non-magnetic fcc (111) alloy and a soft magnetic alloy (*col. 24, lines 43 – 46*), where the fcc (111) alloy can comprise Cu (*col. 8, lines 51 – 67 and col. 24, lines 20 – 24*). While Lambeth et al. does not explicitly teach that the "(111) face is oriented in a direction perpendicular to the substrate", the Examiner deems that such a limitation would necessarily be present since Lambeth et al. explicitly calls the alloy a fcc(111) alloy and uses it to form the hcp crystal structure in the subsequently deposited Co alloy.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. in view of Belser to use a conductive layer and soft magnetic layer meeting applicants' claimed structural and material limitations as taught by Lambeth et al. since such an underlayer structure can improve the perpendicular magnetic properties of the medium.

12. Claims 15 – 17, 20, 21 and 24 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('620 B1) in view of Shimizu et al. (U.S. Patent App. No. 2002/0012816 A1).

Regarding claims 15 – 17 and 26, Kikitsu et al. disclose a magnetic recording apparatus comprising a magnetic recording medium (*Title*) in which a mainly aluminum oxide layer having holes (*Figure 13A, element 31; col. 9, lines 24 – 36; col. 25, lines 21 – 25; and col. 30, lines 23 – 37*) on a substrate (*Figure 13B, element 10*) is filled with a magnetic substance (*Figure 13A, element 32 and col. 25, lines 26 – 38*), comprising at

least one underlayer (i.e. applicants' "conductive layer") between the mainly aluminum layer and the substrate (*Figure 13B, element 20 and col. 25, line 66 bridging col. 26, line 14 – "Cr" or "NiFe"*), wherein the magnetic substance contacts the conductive layer (*Figure 13B*) and includes a hard magnetic substance including MPt alloys (*col. 25, lines 26 – 38: "CoPt"*) and the c-axes of which are oriented in a direction perpendicular to the substrate (*col. 10, lines 34 – 41; col. 25, lines 26 – 38; and col. 26, lines 10 - 14*).

Kikitsu et al. fail to disclose whether the MPt magnetic alloys possess a $L1_0$ crystal structure or whether the underlayer has a fcc structure with its (001) face oriented in a direction perpendicular to the substrate.

However, Shimizu et al. teach a perpendicular magnetic film possessing excellent noise characteristics and good resistance to thermal fluctuations (*Paragraphs 0002 – 0008*), wherein a $L1_0$ structured magnetic layer (*Paragraph 0027*) is formed over an underlayer designed to enhance the anisotropy of the magnetic film and comprising identical materials to those disclosed by applicants (*Paragraph 0021 - "Pd, C, Cu, Pt or MgO"*). The Examiner deems that since identical underlayer materials are disclosed (*Pd, Pt and Cu*) for use under identical MPt $L1_0$ alloys, that the disclosed seed layers would necessarily possess a structure such that the "(001) face is oriented in a direction perpendicular to the substrate" or an $L1_0$ magnetic layer would not be capable of being formed on the disclosed underlayers.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. to use an $L1_0$ MPt magnetic alloy on a conductive underlayer meeting applicants' claimed structural and

material limitations as taught by Shimizu et al. since such an combination can produce a hard magnetic recording layer capable of possessing excellent noise characteristics and good resistance to thermal fluctuations.

Regarding claims 20 and 21, Kikitsu et al. disclose magnetic alloys meeting applicants' claimed composition limitations (*col. 25, lines 26 – 39*). Regarding the limitation "given epitaxial growth", Kikitsu et al. teach using the conductive layer as a seed layer for the magnetic material for controlling the anisotropy and, hence, "epitaxial growth" of the subsequently deposited magnetic layer (*col. 13, line 24 bridging col. 14, line 8*).

Regarding claims 24 and 25, Kikitsu et al. teach that the holes can be arranged according to applicants' claimed structural limitations depending on the desired areal recording density (*Figures; col. 10, lines 24 – 25; and col. 17, lines 36 – 50*).

13. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. in view of Shimizu et al. as applied above, and further in view of Suzuki et al. (U.S. Patent No. 6,641,934 B1).

Kikitsu et al. in view of Shimizu et al. are relied upon as described above.

Neither of the above disclose an MgO (001) or soft magnetic layer under the conductive underlayer.

However, Suzuki et al. teach forming a MgO layer (*Figure 5, element 51*), a soft magnetic layer (*element 31*) and then a conductive non-magnetic layer (*element 21 and col. 4, lines 49 - 61*) under a $L1_0$ magnetic layer (*element 11*) in order to improve the

crystalinity of the layers and the magnetic coercivity of the medium (*col. 4, line 62 bridging col. 5, line 20*). While Suzuki et al. does not explicitly state that the MgO layer is an "MgO (001) layer", the Examiner notes that Suzuki et al. does state that all the layers, including the recording layer, are structured to have the (001) face parallel to each other and the substrate (*col. 4, lines 49 – 61*). As such, the Examiner deems that there is sound basis for the position that the disclose MgO layer in Suzuki et al. is necessarily an "MgO (001)" layer since both applicants and Suzuki et al. disclose using the MgO layer as a lower underlayer for the formation of an $L1_0$ perpendicular magnetic recording layer over a subsequently deposited metal conductive layer, such as Pt or Pd.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. in view of Shimizu et al. to include an MgO and soft magnetic layer under the conductive metal underlayer as taught by Suzuki et al. since such a structure improves the crystalinity of the subsequently deposited layers and improves the coercivity of the medium.

14. Claims 27 – 31 and 34 – 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. in view of Shimizu et al. as applied above, and further in view of Wong et al. (U.S. Patent No. 6,428,906 B1) and Coffey et al. (U.S. Patent App. No. 2002/0098381 A1).

Kikitsu et al. and Shimizu et al. are relied upon as described above.

Regarding claims 27, 29 and 36, neither of the above disclose using conductive layer meeting applicants' claimed crystal structure and "square array face" orientation under the $L1_0$ perpendicular magnetic layer.

However, Wong et al. teach that disordered fcc structures, including $L1_0$ structures and $L1_0$ alloys meeting applicants' claimed material limitations, can also serve to have "positive effects on the perpendicular magnetic properties" (*col. 1, lines 41 – 47 and col. 3, lines 1 – 6*). While Wong et al. does not explicitly teach using these underlayers under a $L1_0$ structure magnetic layer, Coffey et al. provides a teaching that $L1_0$ underlayers are also known to be useable under $L1_0$ magnetic layers (*Paragraphs 0031 and 0037*). The fact that Coffey et al. use these layers for longitudinal recording is not deemed critical since the relied upon Shimizu et al. teachings provides clear support that $L1_0$ alloys can be used for perpendicular recording as well as longitudinal.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. in view of Shimizu et al. to use a L10 underlayer meeting applicants' claimed limitations as taught by Wong et al. and Coffey et al. since such a layer can have a "positive effects on the perpendicular magnetic properties".

Regarding claims 28 and 31, Shimizu et al. disclose magnetic alloys meeting applicants' claimed material limitations (*Paragraph 0027*). Regarding the limitation "given epitaxial growth", Kikitsu et al. teach using the conductive layer as a seed layer for the magnetic material for controlling the anisotropy and, hence, "epitaxial growth" of the subsequently deposited magnetic layer (*col. 13, line 24 bridging col. 14, line 8*).

Regarding claim 30, Coffey et al. teach that elements meeting applicants' claimed limitations can be added to the L10 alloys to affect the processing conditions, remanence and other magnetic properties (*Paragraph 0035*).

Regarding claims 34 and 65, Kikitsu et al. teach that the holes can be arranged according to applicants' claimed structural limitations depending on the desired areal recording density (*Figures; col. 10, lines 24 – 25; and col. 17, lines 36 – 50*).

Allowable Subject Matter

15. The following is a statement of reasons for the indication of allowable subject matter: claims 6 – 8 are deemed allowable over the prior art of record, since the prior art of record fails to teach or render obvious a structure wherein a conductive underlayer is located under the pore hole, while simultaneously "a portion of each of the fillers with which the holes are filled ... has fcc structure and its (111) face is oriented in a direction perpendicular to the substrate". Claim 33 is deemed allowable over the prior art of record, since the prior art of record fails to teach or render obvious a structure comprising a $L1_0$, $L1_1$ or $L1_2$ conductive underlayer under a $L1_0$ perpendicular magnetic layer and further comprising a soft magnetic layer under the conductive underlayer. The Examiner notes the same reasoning applies to claim 32 (with respect to an MgO (001) layer) upon filing of a terminal disclaimer to overcome the double patenting rejection over co-pending application 10/656,242.

Response to Arguments

16. The rejection of claims 1 – 5 and 7 - 14 under 35 U.S.C § 103(a) – Iwasaki et al. in view of various references

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Bernatz
Patent Examiner

June 5, 2004